Lead-free Green

**BAT750**

# 0.75A SURFACE MOUNT SCHOTTKY BARRIER RECTIFIER

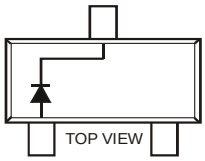
## Features

- Very Low Forward Voltage Drop
- High Conductance
- For Use in DC-DC Converter, PCMCIA, and Mobile Telecommunications Applications
- **Lead, Halogen and Antimony Free, RoHS Compliant "Green" Device (Notes 3 and 4)**
- **Qualified to AEC-Q101 Standards for High Reliability**

## Mechanical Data

- Case: SOT-23
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Polarity: See Diagram
- Marking Information: See Page 3
- Ordering Information: See Page 3
- Weight: 0.008 grams (approximate)

Top View




Device Schematic

## Maximum Ratings @$T_A$ = 25°C unless otherwise specified

Single phase, half wave, 60Hz, resistive or inductive load.
For capacitance load, derate current by 20%.

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 40 | V |
| RMS Reverse Voltage | $V_{R(RMS)}$ | 28 | V |
| Average Rectified Current | $I_O$ | 0.75 | A |
| Non-Repetitive Peak Forward Surge Current<br>8.3ms Single half sine-wave superimposed on rated load | $I_{FSM}$ | 5.5 | A |

## Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Power Dissipation (Note 1) | $P_D$ | 350 | mW |
| Typical Thermal Resistance, Junction to Ambient Air (Note 1) | $R_{\theta JA}$ | 286 | °C/W |
| Operating and Storage Temperature Range | $T_J$, $T_{STG}$ | -55 to +125 | °C |

## Electrical Characteristics @$T_A$ = 25°C unless otherwise specified

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|---|---|---|---|---|---|---|
| Reverse Breakdown Voltage (Note 2) | $V_{(BR)R}$ | 40 | 45 | — | V | $I_R$ = 300uA |
| Forward Voltage | $V_F$ | — | 225<br>235<br>290<br>340<br>390<br>420<br>475 | 280<br>310<br>350<br>420<br>490<br>540<br>650 | mV | $I_F$ = 50mA<br>$I_F$ = 100mA<br>$I_F$ = 250mA<br>$I_F$ = 500mA<br>$I_F$ = 750mA<br>$I_F$ = 1000mA<br>$I_F$ = 1500mA |
| Reverse Current (Note 2) | $I_R$ | — | 50 | 100 | μA | $V_R$ = 30V |
| Total Capacitance | $C_T$ | —<br>— | 175<br>25 | —<br>— | pF<br>pF | $V_R$ = 0V, f = 1.0MHz<br>$V_R$ = 25V, f = 1.0MHz |
| Reverse Recovery Time | $t_{rr}$ | — | — | 10 | ns | $I_F$ = $I_R$ = 100mA,<br>$I_{rr}$ = 10mA. See figure 6. |

Notes:
1. Part mounted on FR-4 PC board with recommended pad layout, which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf.
2. Short duration pulse test used to minimize self-heating effect.
3. No purposefully added lead. Halogen and Antimony Free.
4. Product manufactured with Data Code V9 (week 33, 2008) and newer are built with Green Molding Compound. Product manufactured prior to Date Code V9 are built with Non-Green Molding Compound and may contain Halogens or $Sb_2O_3$ Fire Retardants.

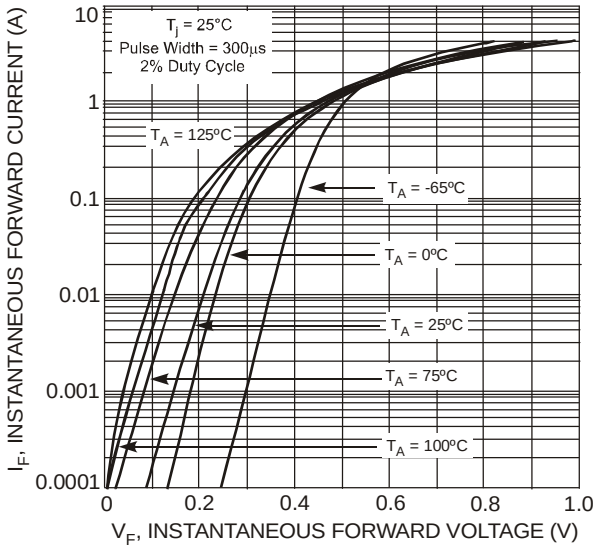



Fig. 1 Typical Forward Characteristics

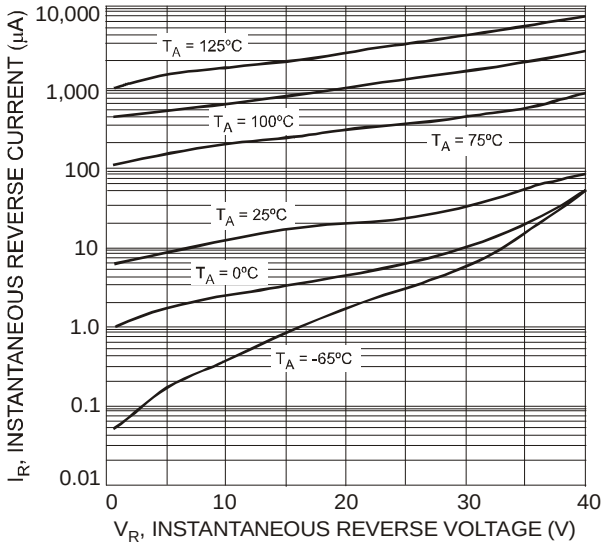



Fig. 2 Typical Reverse Characteristics

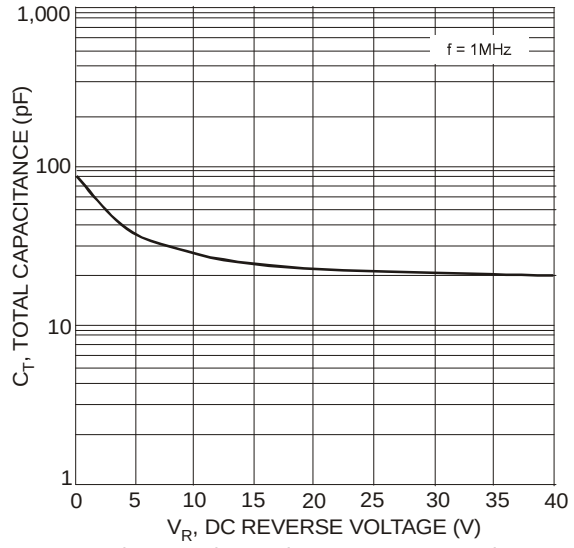



Fig. 3 Total Capacitance vs. Reverse Voltage

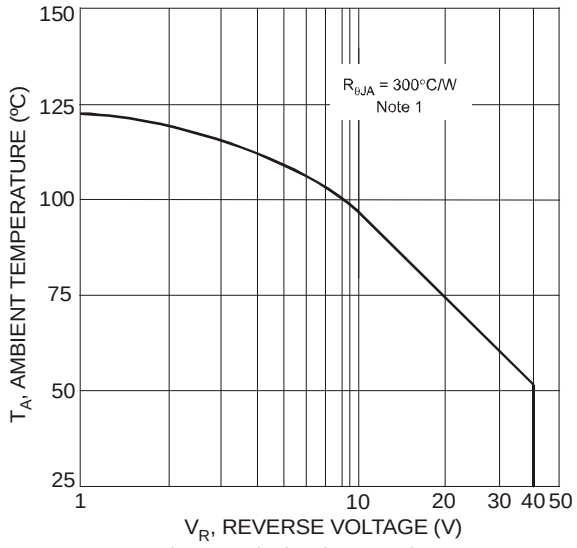



Fig. 4 Typical Safe Operating Area

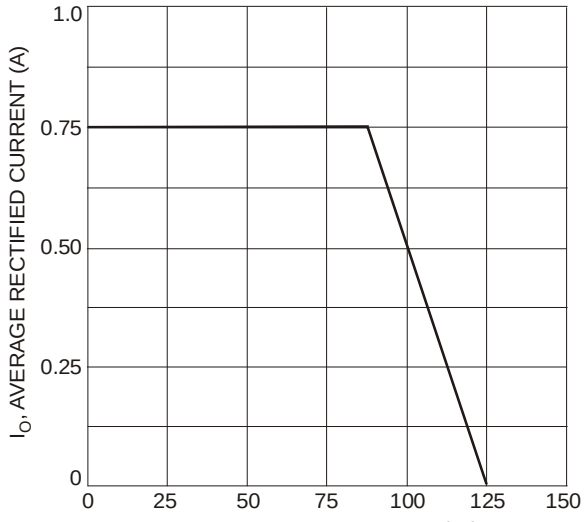
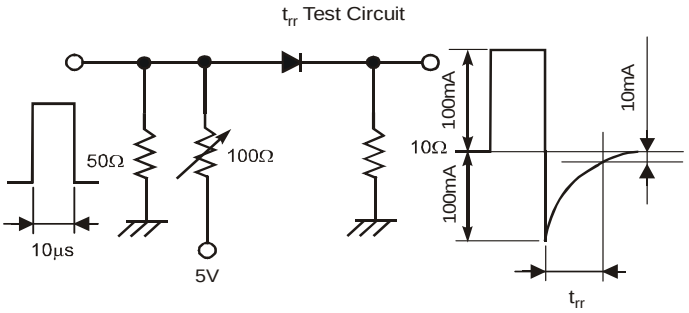



Fig. 5 Forward Current Derating Curve

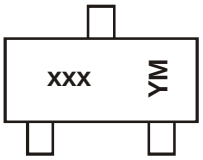


## Ordering Information (Note 5)

| Part Number | Case | Packaging |
|---|---|---|
| BAT750-7-F | SOT-23 | 3000/Tape & Reel |

Notes: 5. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

## Marking Information



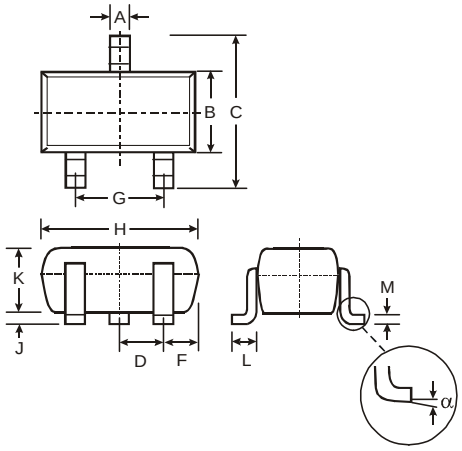

xxx = Product Type Marking Code (K77 or K79)
YM = Date Code Marking
Y = Year ex: N = 2002
M = Month ex: 9 = September

Date Code Key

| Year | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Code | M | N | P | R | S | T | U | V | W | X | Y | Z |

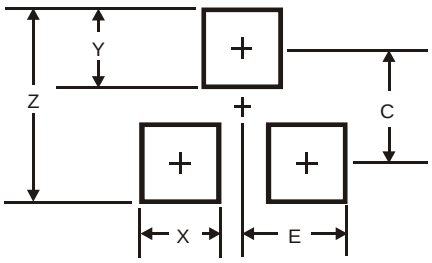
| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Code | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | O | N | D |

## Package Outline Dimensions




| SOT-23 | | |
|---|---|---|
| Dim | Min | Max |
| A | 0.37 | 0.51 |
| B | 1.20 | 1.40 |
| C | 2.30 | 2.50 |
| D | 0.89 | 1.03 |
| F | 0.45 | 0.60 |
| G | 1.78 | 2.05 |
| H | 2.80 | 3.00 |
| J | 0.013 | 0.10 |
| K | 0.903 | 1.10 |
| L | 0.45 | 0.61 |
| M | 0.085 | 0.180 |
| α | 0° | 8° |
| All Dimensions in mm | | |

## Suggested Pad Layout




| Dimensions | Value (in mm) |
|---|---|
| Z | 2.9 |
| X | 0.8 |
| Y | 0.9 |
| C | 2.0 |
| E | 1.35 |